What is claimed is:

1. A method for wavelength locking in optical fiber communications comprising the steps of:

providing a portion of input optical signals as an input light beam;

dividing the input light beam into a plurality of sub light beams by a grating;

passing the sub light beams through an etalon for forming distinct response curves;

transducing the response curves into electric signals; and

comparing the electric signals for locking the center wavelength of the input optical signals.

2. The method for wavelength locking as described in claim 1, wherein the response curves are transduced to the electric signals by photo detectors.

3. The method for wavelength locking as described in claim 1 wherein the comparing step comprises:

making a calculation on the electric signals by a servo system to obtain a feedback signal; and

adjusting the center wavelength of the input optical signals according to the feedback signal.

4. The method for wavelength locking as described in claim 3, wherein the servo

system utilizes one of the sub light beams as a flag for comparing the electric signals.

5. The method for wavelength locking as described in claim 4 further comprising a normalized step of normalizing the feedback signal by a reference signal transduced from one of the sub light beams.

6. The method for wavelength locking as described in claim 1, wherein the grating divides the input light beam into paired sub light beams at the same diffraction angle, and the etalon is rotated at an angle for forming distinct response curves.

7. The method for wavelength locking as described in claim 6, wherein before rotating the etalon, the response curves formed from the paired sub light beams passing through the etalon conform to the International Telecommunication Union (ITU) grid.

8. The method for wavelength locking as described in claim 7, wherein the distinct response curves of the paired sub light beams are transduced into two electric signals, and a servo system is adopted for generating a feedback signal by calculating the difference of the two signals.

9. The method for wavelength locking as described in claim 1 further comprising the spectrum monitoring steps of:

passing the input light beam through a tunable filter before being divided by the grating at different diffraction angles; and

adjusting the tilt of mirrors arranged in the tunable filter for changing the

FWHM of the response curves of the input light beam.

10. The method for wavelength locking as described in claim 9, wherein the tunable filter is a Fabry-Perot filter.

11. The method for wavelength locking as described in claim 9 wherein a servo system is adopted for generating a feedback signal to adjust the tilt of the mirrors arranged in the tunable filter.

12. The method for wavelength locking as described in claim 9, wherein the transduction of the response curves comprises the steps of:

transducing the optical power at the peak of the response curve of a first sub light beam into a first electric signal;

transducing a proportion of the optical power at the peak of the response curve of the second sub light beam into a second electric signal; and

determining whether the ratio of the second electric signal to the first electric signal equals the proportion.

13. The method for wavelength locking as described in claim 12, wherein the proportion equals 0.5.

14. A method for locking wavelengths of a radiation source to the ITU grid comprising the steps of :

providing a portion of optical signals emitted from the radiation source as an input light beam;

dividing the input light beam into a plurality of sub light beams by a grating at the same diffraction angle;

passing the sub light beams through an etalon for forming response curves each conforming to the ITU grid;

rotating the etalon for forming distinct response curves deviated from the ITU grid pattern;

transducing the distinct response curves into electric signals; and

comparing the electric signals for locking the center wavelength of the radiation source conforming to the ITU grid.

15. A device for locking wavelengths of a radiation source comprising:

a grating to divide a portion of input optical signals emitted from the radiation source into a plurality of sub light beams;

an etalon to receive the plurality of sub light beams that further form distinct response curves;

a plurality of photo detectors for transducing the response curves into electric signals; and

a servo system for comparing the electric signals and generating a feedback signal to lock the center wavelength of the input optical signals.

16. The device for wavelength locking as described in claim 15 further comprising a wavelength tunable filter disposed between the radiation source and the grating.

17. The device for wavelength locking as described in claim 16, wherein the wavelength tunable filter is a Fabry-Perot filter.

18. The device for wavelength locking as described in claim 16, wherein the servo system generates a feedback signal after comparing the electric signals to adjust the finesse of the wavelength tunable filter for monitoring the FWHM of the input optical signals.